Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

1. (currently amended) A homogenous assay method for directly detecting a donor-product produced in a group transfer reaction, the method comprising:

a) reacting a donor molecule, comprising a nucleotide attached to a covalent adduct, X, with an acceptor in the presence of a catalytically active enzyme, such that the donor molecule is partially consumed;

b) forming the donor-product and an acceptor-X;

c) contacting the donor-product with a first complex comprising an antibody that specifically recognizes the donor-product in the presence of a donor-molecule and a detectable tag that is specifically displaced from the antibody by the donor-product and is capable of producing an observable;

d) competitively displacing the detectable tag of the first complex by the donor-product to generate a second complex and a displaced detectable tag resulting in the production of an observable; and

e) detecting a change in the observable produced by the detectable tag in the first complex and the displaced detectable tag.

2. (original) The method of Claim 1, further comprising,

f) quantifying the observable of step (e).

3.-4. canceled.

5. (previously presented) The method of Claim 1, wherein the antibody is a monoclonal antibody.

6. Cancelled.

7. (previously presented) The method of Claim 1, wherein the detectable tag is a tracer, wherein the tracer is a fluorescent molecule conjugated to a nucleotide.

8. (original) The method of Claim 1, further comprising detecting a catalytic activity, wherein the catalytic activity generates the donor-product in the group transfer reaction.

9. (currently amended) The method of Claim 1 8, wherein the enzyme is ~~catalytic activity comprises~~ a kinase.

10 (original) The method of Claim 1, wherein the method is an immunoassay.

11. (previously presented)The method of Claim 10, wherein the immunoasaay is fluorescence polarization immunoassay (FPIA).

12. (original) The method of Claim 1, wherein the method is used for screening a chemical library to identify a molecule which is capable of activating or inhibiting a group transfer reaction enzyme.

13. (original) The method of Claim 12, wherein the molecule is capable of altering either the function, the stability, or both the function and the stability of the acceptor.

14. (original) The method of Claim 12, wherein the molecule is capable of exhibiting a therapeutic effect.

15. (original) The method of Claim 12, wherein the library is screened using a high-throughput screening technique comprising a multiwell plate, a microarray or a microfluidic system.

16. (withdrawn) An antibody produced against a donor product of a group transfer reaction, wherein the antibody comprises the ability to preferentially distinguish between a donor-product and a donor in the presence of a high donor concentration.

17. (withdrawn) The antibody of Claim 16, wherein the donor-product is selected from the group consisting of a nucleotide or a non-nucleotide.

18. (withdrawn) The antibody of Claim 16, wherein the antibody is specific for a phosphate portion of a nucleotide, and wherein the antibody has the ability to distinguish between a 5'-phosphate, a 5' -phosphosulfate, a 5'-diphosphate and a 5' --triphosphate.

19. (currently amended) A homogenous assay method for directly detecting a donor-product produced in a group transfer reaction in the presence of a donor molecule, the method comprising the steps of:

a) reacting a donor molecule, comprising a nucleotide attached to a covalent adduct, X, with an acceptor in the presence of a catalytically active enzyme to form the donor-product, an ADP, and an acceptor-X, such that the donor molecule is partially consumed;

b) combining the donor-product produced in a group transfer reaction with a tracer and a macromolecule to provide a reaction mixture, the macromolecule being specific for the donor-product, the tracer comprising the donor-product conjugated to a fluorophore, and capable of binding to the macromolecule to produce a detectable change in fluorescence polarization, wherein the macromolecule is an antibody;

c) measuring the fluorescence polarization of the mixture to obtain a measured fluorescence polarization; and

d) comparing the measured fluorescence polarization with a characterized fluorescence polarization value corresponding to a known donor-product concentration to directly detect the donor-product produced in the group transfer reaction.

20. (previously presented) The assay of Claim 19, wherein the group transfer reaction is catalyzed by an enzyme.

21. (previously presented) The assay of Claim 19, wherein the enzyme is a kinase.

22. Cancelled.

23. (previously presented) The assay of Claim 19, wherein the fluorophore is fluorescein, preferably one of a series of ALEXA FLUOR® dyes (a family of fluorescent dyes synthesized through sulfonation of amino-coumarin or rhodamine).

24. (original) A method of using the assay of Claim 19 to screen a chemical library to identify a molecule which is capable of inhibiting or activating a group transfer reaction enzyme.

25. (withdrawn) An assay kit for characterizing a donor-product from a group transfer reaction, the assay kit comprising:

a macromolecule and a tracer, each in an amount suitable for at least one homogeneous fluorescence polarization assay for donor-product, wherein the macromolecule is a an antibody or an inactivated enzyme; and wherein the macromolecule and the tracer may be separate or together in the container.

26. (withdrawn) The assay kit of Claim 25, further comprising packaging, and instructions for using the antibody and the tracer in the homogeneous fluorescence polarization assay, the antibody being specific for donor-product, the tracer comprising donor-product conjugated to a fluorophore, the tracer being able to bind to the antibody to produce a detectable change in fluorescence polarization.

27. (withdrawn) The assay kit of Claim 26 wherein the fluorophore is selected from the group consisting of fluorescein, rhodamine, Texas red and derivatives thereof.

28. (previously presented) A homogenous assay method of for directly detecting a donor-product produced in a group transfer reaction, the method comprising:

a) reacting a donor molecule, an adenosine triphosphate (ATP), with an acceptor, a polypeptide, in the presence of a catalytically active enzyme, a kinase;

b) forming the donor-product, an adenosine diphosphate (ADP) and an acceptor-X, a phosphorylated polypeptide;

c) contacting the ADP with a first complex comprising an antibody, that specifically recognizes the ADP and a detectable tag, a tracer, capable of producing an observable;

d) competitively displacing the detectable tag of the first complex by the donor-product, ADP, to generate a second complex, ADP-antibody complex and a displaced detectable tag, a tracer, to directly detect the donor-product in the kinase reaction; and

e) detecting a change in the observable produced by the tracer in the first complex bound to the antibody and the tracer.

29. (previously presented) A homogenous assay method of for directly detecting a donor-product produced in a group transfer reaction, the method comprising the steps of:

a) combining the donor-product, an adenosine diphosphate (ADP), produced in a the group transfer reaction, a kinase reaction, with a tracer and an antibody to provide a reaction mixture, the antibody being specific for the ADP, the tracer comprising the ADP conjugated to a fluorophore and capable of binding to the antibody to produce a detectable change in fluorescence polarization;

b) measuring the fluorescence polarization of the reaction mixture to obtain a measured fluorescence polarization; and

c) comparing the measured fluorescence polarization with a characterized fluorescence polarization value corresponding to a known ADP concentration to directly detect the ADP produced in the kinase reaction.

30. (new) A homogenous assay method for directly detecting a donor-product produced in a group transfer reaction, the method comprising the steps of:

a) reacting a donor molecule, comprising a nucleotide attached to a covalent adduct, X, with an acceptor in the presence of a catalytically active enzyme to form the donor-product, an ADP, and an acceptor-X, such that the donor molecule is partially consumed;

b) combining the donor-product produced in a group transfer reaction with a tracer and a macromolecule to provide a reaction mixture, the macromolecule being specific for the donor-product, the tracer comprising the donor-product conjugated to a fluorophore, and capable of binding to the macromolecule to produce a detectable change in fluorescence resonance energy transfer (FRET), wherein the macromolecule is an antibody;

c) measuring the energy transfer of the mixture to obtain a measured energy transfer; and

d) comparing the measured energy transfer with a characterized energy transfer value corresponding to a known donor-product concentration to directly detect the donor-product produced in the group transfer reaction.

31. (new) A homogenous assay method for directly detecting a donor-product produced in a group transfer reaction, the method comprising:

a) reacting a donor molecule, comprising a nucleotide attached to a covalent adduct, X, with an acceptor in the presence of a catalytically active group transfer enzyme, such that the donor molecule is partially consumed, wherein the enzyme is selected from the group consisting of a sulfotransferase, a kinase, a UDP-glucuronosyltransferase, a methyl transferase, a acetyl transferase, a glutathione transferase, and a ADP-ribosyltransferase;

b) forming the donor-product and an acceptor-X;

c) contacting the donor-product with a first complex comprising an antibody that specifically recognizes the donor-product in the presence of a donor-molecule and a detectable tag that is specifically displaced from the antibody by the donor-product and is capable of producing an observable;

d) competitively displacing the detectable tag of the first complex by the donor-product to generate a second complex and a displaced detectable tag resulting in the production of an observable; and

e) detecting a change in the observable produced by the detectable tag in the first complex and the displaced detectable tag.

32. (new) The method of Claim 31, wherein the enzyme is a sulfotransferase.

33. (new) The method of Claim 31, wherein the enzyme is a UDP-glucuronosyltransferase.